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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,734	09/26/2003	Hsiung-Kuang Tsai	Q77679	6756
23373	7590	05/27/2005	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			STULTZ, JESSICA T	
			ART UNIT	PAPER NUMBER
			2873	

DATE MAILED: 05/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/670,734	Applicant(s) TSAI, HSIUNG-KUANG	
	Examiner Jessica T. Stultz	Art Unit 2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miles US 6,650,455 (herein referred to as Miles '455) in view of Miles 6,674,562 (herein referred to as Miles '455).

Regarding claim 1, Miles '455 discloses a color changeable pixel (Column 6, lines 37-67 and Column 9, lines 3-55, wherein an array of the pixels "400" are shown in Figure 4A and a single color changeable pixel is shown in Figure 5A), comprising: a first plate (Column 9, lines 3-55, wherein the first plate is mirror "508", Figures 5A and 5B); an operating plate (Column 9, lines 3-55, wherein the operating plate is film "504" and electrode "502", Figures 5A and 5B), wherein the operating plate is settled in parallel with the first plate (Shown in Figures 5A and 5B); a second plate, the second plate settled between the first plate and the operating plate (Column 9, lines 3-55, wherein the second plate is membrane/mirror "506", Figures 5A and 5B), at least one first post located between the operating plate and the second plate, wherein the second plate is directly connected to the first post (Column 9, lines 3-55, wherein the first posts are the side vertical portions of the U-shaped plate "506", Figures 5A and 5B), wherein a cavity is formed between the first plate and the second plate (Shown in Figures 5A and 5B, wherein the cavity is "505", between the first plate "508" and the second plate "506"), and an incident light

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from one side of the first plate is modulated and a reflected light of only specific frequency is reflected by second plate (Column 9, line 3-55, wherein the structure reflects certain frequencies of light), and the second plate directly contacts and shifts along the first post towards the operating plate (Shown in Figure 5B, wherein the second plate "506" deforms towards the operating plate "504" along the vertical side portions) by a voltage added on the operating plate to change the distance of the cavity, thereby changing the frequency of the reflected light (Column 9, lines 3-55, wherein the change in length of the cavity "505", i.e. vertical movement of membrane mirror "506", is determined by voltage applied to the electrode "502", which changes the optical reflective properties of the structure), but does not specifically disclose at least one second post located between the first plate and the second plate. Miles '562 teaches of a pixel with movable plates including a first plate, a second plate and an operating plate (Column 7, lines 38-67, wherein the first plate is "300", the second plate is "302", and the operating plate is "304", Figures 3A-C), at least a first post located between the operating plate and the second plate, wherein the second plate shifts along the first post (Column 7, lines 38-67, wherein the first post is one of the posts "306", Figures 3A-C); and specifically including at least a second post located between the first plate and the second plate (Column 7, lines 38-67, wherein the second post is another of the posts "306", Figures 3A-C), for the purpose of providing a supporting frame for the thin film and provide mechanical integrity of the device (Column 7, lines 38-67, wherein the membrane "302" moves along the post "306" and the frame is used as a support for the thin metallic films). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the pixel of Miles '455 to further include at least one second post located between the first plate and the second plate since Miles '562

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teaches of a pixel with movable plates including a first plate, a second plate and an operating plate, at least a first post located between the operating plate and the second plate, wherein the second plate shifts along the first post; and specifically including at least a second post located between the first plate and the second plate, for the purpose of providing a supporting frame for the thin film and provide mechanical integrity of the device.

Regarding claims 2-3, Miles '455 and Miles '562 disclose and teach of a pixel as shown above and Miles '455 further discloses that the first plate comprises: a transparent conductive substrate (Column 9, lines 3-55, wherein the mirror "508" is located on semi-transparent, i.e. at least partly absorbing, superstructure "510", Figures 5A and 5B); an absorption layer; and a dielectric layer (Column 10, lines 6-51, wherein the substrate is covered by a thin film absorber stack "704", made of a dielectric layer, conductive layer, and insulator layer, Figures 7A and 7B).

Regarding claim 4, Miles '455 and Miles '562 disclose teach a pixel as disclosed above and Miles '562 further teaches that the dielectric layer is made of silicon oxide, silicon nitride or metal oxide for the purpose of providing good mechanical strength and tether in the pixel (Column 9, lines 25-64, wherein the dielectric material is silicon oxide, aluminum oxide or silicon nitride). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the pixel of Miles '455 to further include a dielectric layer made of silicon nitride and a substrate made of ITO since Miles '562 further teaches that the dielectric layer is made of silicon oxide, silicon nitride or metal oxide for the purpose of to provide good mechanical strength and tether in the pixel.

Regarding claim 5, Miles '455 and Miles '562 disclose and teach of a pixel as shown above and Miles '455 further discloses that the absorption layer is made from metal (Column 9, lines 3-55, wherein the mirror "508" is made of chromium, Figures 5A and 5B).

Regarding claim 7, Miles '455 and Miles '562 disclose and teach of a pixel as shown above and Miles '455 further discloses that the first and second plates are metal mirrors (Column 9, lines 3-55, wherein the first plate "508" is a chromium mirror and the second plate "506" is an aluminum mirror, Figures 5A and 5B).

Regarding claim 8, Miles '455 and Miles '562 disclose and teach of a pixel as shown above and Miles '455 further discloses that the second plate is a deformable plate (Column 9, lines 3-55, wherein the membrane mirror "506" is deformable, Figures 5A and 5B).

Regarding claim 9, Miles '455 and Miles '562 disclose and teach of a pixel as shown above and Miles '455 further discloses that the second plate is a moveable plate (Column 9, lines 3-65, wherein the membrane mirror "506" is movable and wherein the mirror "608" is moveable, Figures 5A, 5B, 6A, and 6B).

Regarding claim 10, Miles '455 and Miles '562 disclose and teach of a pixel as shown above and Miles '455 further discloses that the second plate at least comprises a dense material (Column 9, lines 3-55, wherein the membrane mirror "506" is made of thick aluminum, i.e. a dense material, Figure 5A and 5B) or semi-transparent (Column 10, lines 13-51, wherein the membranes "702" is made of semi-transparent aluminum, Figures 7A and 7B).

Regarding claim 11, Miles '455 and Miles '562 disclose and teach of a pixel as shown above and Miles '455 further discloses that the semi-transparent material is a thin metal (Column 10, lines 13-51, wherein the membranes "702" is made of thin metal films, Figures 7A and 7B).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miles '455 in view of Miles '562 and further in view of Huibers.

Regarding claim 6, Miles '455 and Miles '562 disclose and teach a pixel as disclosed above, but do not specifically disclose that the substrate is ITO or IZO. Huibers teaches of a pixel cell (Column 6, line 66-Column 7, line 5, wherein the pixel cells are shown in Figures 2A-F) wherein a layer of ITO is added to the substrate for the purpose of providing a transparent conductive substrate to move the mirrors toward the top substrate (Column 17, lines 5-17). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the pixel of Miles '455 and Miles '562 to further include a substrate made of ITO since Huibers discloses a pixel cell wherein a layer of ITO is added to the substrate for the purpose of providing a transparent conductive substrate to move the mirrors toward the top substrate.

### *Response to Arguments*

Applicant's arguments filed May 5, 2005 have been fully considered but they are not persuasive. Specifically applicant argues that Miles '455 does not disclose at least one first post wherein the second plate shifts along the first post, however, in light of the amended claim and upon examiner's further reconsideration of the prior art the vertical portions of the U-shaped plate "506" are posts directly connected to the deformable middle portion of the second plate "506" (Shown in Figures 5A and 5B), wherein the second plate directly contacts and shifts along the first post towards the operating plate (Shown in Figure 5B, wherein the second plate "506" deforms towards the operating plate "504" along the vertical side portions). Regarding applicant's argument that neither Miles '455 or Miles '562 discloses a second plate shifting

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along a second post, i.e. towards the first plate, the examiner agrees, however, the claim is stated in the alternative, wherein the second plate shifts along either the first post or the second post, and since the second plate of Miles '455 and Miles '562 shifts along the first post towards the operating plate, the rejection stands.


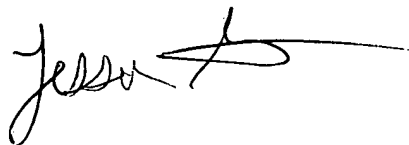
### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessica T Stultz whose telephone number is (571) 272-2339. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jessica Stultz  
Patent Examiner  
AU 2873  
May 25, 2005



**JORDAN SCHWARTZ**  
**PRIMARY EXAMINER**